Remarks

Applicant respectfully requests reconsideration of this application as amended. Claim 16 has been amended. No claims have been cancelled or added. Therefore, claims 1-21 are presented for examination.

Claim Objections

Claims 1, 2 and 8 stand objected to because of the following informalities: These claims refer to the second router as the "redundant" router, while other claims refer to the second router as the "protection" router. Applicants submit that claims 1, 2, and 8 do not require amendment. The use of "redundant" router is intended to capture different coverage than the term "protection" router. As such, applicants submit that claims 1, 2, and 8 do not need to be amended for consistent terminology.

Claim 10 stands objected to because of the following informalities: The term of claim 10 "...terminating communication between the router and the multiplexor..." should be rewritten as "...terminating communication between the protection router and the multiplexor...." Applicants submit that claim 10 does not require amendment. The phrasing of claim 10 "...terminating communication between the router and the multiplexor..." is specifically intended. It is the termination of the communication between *the router* and the multiplexor that is desired, not the termination of the communication between the *protection router* and the multiplexor.

Claim 16 stands objected to because of the following informalities: "transmitting a link control protocol configuration <u>request</u> signal" should be changed to "transmitting a link

control protocol configuration <u>response</u> signal". Applicants submit that claim 16 has been amended to appear in proper form for allowance.

35 U.S.C. §103(a) Rejection

Claims 1, 3-5, 9, 11, 20 and 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Shew (U.S. Patent No. 6,530,032), in view of Hess (U.S. Patent No. 5,835,696). Applicants submit that the present claims are patentable over Shew in view of Hess.

Shew discloses a network fault recovery method and apparatus. Layer one, two, and three (L1/L2/L3) integration and a L1 cut-through path utilization is presented. A switch combines an IP router with L2 capabilities, and an L1 cross connect. A network of such switches is configured with label switched paths that correspond to L1 cut-through paths. (Shew at Abstract.) Furthermore, a SONET ring is presented with corresponding routers and respective add/drop multiplexors. (Fig. 10(a).)

Hess discloses a backup facility for data routers including a mutual backup feature that allows each of the routers to be active at the same time while also providing a standby monitoring function for the other routers. (Hess at Abstract). Each router in a pair of routers is active, and includes an active port and a standby port. The standby port in the first router is configured to monitor the active port of the second router, and vice versa. If the standby port of the first router detects a failure in the active port of the second router, then the standby port assumes the identity of the faulty active port and accepts data traffic addressed to that faulty port. The activated standby port of the first router then routes the data traffic to

the standby port of the second router through the first router's active port, so that the second

router may route the data traffic to the intended destination. (Col. 1, lines 50-64).

Claim 1 of the present application recites:

In a network having a router coupled to a multiplexor via a first
multiplexor line and a redundant router coupled to the multiplexor
via a second multiplexor line, the multiplexor further coupled to a
network ring, a method comprising:
transmitting by the redundant router a signal to the router
through a communications medium coupling the router and the
redundant router;
initiating by the redundant router a switch from the router
communicating with the multiplexor via the first multiplexor line
to the redundant router communicating with the multiplexor via the
second multiplexor line based at least in part on the redundant
router not receiving a response via the communications medium to
the signal; and
transmitting by the redundant router a request signal to a
neighbor device coupled to the network ring, the request signal
transmitted via the second multiplexor line, the multiplexor and the
network ring, the request signal indicating an identifier of the
redundant router;
transmitting by the neighbor device a response signal to the
redundant router via the network ring and multiplexor, the
response signal indicating the identifier of the redundant router;
transmitting by the multiplexor the response signal to the
router via the first multiplexor line and the redundant router via the
second multiplexor line;
receiving at the router via the first multiplexor line the
response signal and detecting a switch to communication with the
multiplexor from the router via the first multiplexor line to the
redundant router via the second multiplexor line based on the
presence of the identifier of the redundant router in the response
signal.

The Office Action acknowledges that Shew does not disclose or suggest a coupling of

a redundant router to the same multiplexor via a second multiplexor line. (Office Action at

page 3, point 5). Instead, the Examiner asserts that Hess teaches "a pair of routers, namely

'active router' (Fig. 2 elmt 10-1) and 'standby router' (Fig. 2 elmt 10-2) combined as a single

group." (Id.) Furthermore, the Examiner states:

Hess teaches that the networking elements, including routers, hubs, bridges and host devices, exchange configuration information (col 3 ln 33-37). One situation where this occurs is where the standby router initiates switchover from the active router, and assumes its operational role. Reconfiguration information, including MAC, IP-addresses and various identifiers are exchanged between the elements on the network and routing tables are updated. Thus, under this scheme, the redundant router can send a signal to a neighboring element or device on the ring, indicating the identifier of the redundant router (its IP-address or some other identifier in the IP-datagram). Accordingly, the device can send back a response signal, echoing [sic] the identifier of the redundant router in the return message. This message is intercepted by the multiplexor, which in turn will forward it to the working router and the protection router, along the first multiplexor line and the second multiplexor line respectively. After that, a switch from the working router to the redundant router can be made, in part based on the identifier of the redundant router (its IP-address) that was included in the response IP-datagram.

Office Action at page 4-5.

However, Applicants submit that neither Shew nor Hess disclose a router detecting a communication switch from the router to a redundant router based on the presence of an identifier of the redundant router in a signal received from a neighbor device coupled to a network ring with which the router communicates. The Examiner infers that Hess discloses such a feature from the statement in Hess of "[t]he network elements, e.g., routers, ... periodically exchange configuration data with one another and use such data to update their respective routing tables to reflect changes in the routing to a particular destination." (Hess at col. 3, lines 33-37.)

Yet, Applicants submit that such a broad statement does not disclose or suggest such a feature, nor can Applicants find any support elsewhere in Hess of such feature. Instead, Hess discloses a first router receiving data intended for a second faulty router and rerouting that data to the second faulty router. There is no disclosure in Hess of the second faulty

router detecting that a communication switch has occurred based a signal received from a device on the network. The faulty router in Hess only receives data rerouted from the first router, and not from any other neighboring devices on a network. (Col 3, lines 37-52.) Therefore, Hess cannot disclose or suggest the features of claim 1.

Since neither Shew nor Hess disclose or suggest a router detecting a communication switch from the router to a redundant router based on the presence of an identifier of the redundant router in a signal received from a neighbor device coupled to a network ring with which the router communicates, any combination of Shew or Hess would also not disclose or suggest such a feature. Therefore, claim 1 is patentable over Shew in view of Hess.

Claims 2-10 depend from claim 1 and include additional limitations. Therefore, claims 2-10 are also patentable over Shew in view of Hess.

Claim 11 recites:

> A method comprising:
> transmitting a first signal from a protection router to a working router via a side band connection;
> if the protection router fails to receive a response to the first signal from the working router, then:
> transmitting a second signal from the protection router to a neighbor device via a signal multiplexor to which the protection router is coupled by way of a protection line and the network device is coupled by way of a network ring, the second signal providing an indicator for the protection router;
> transmitting a third signal from the neighbor device in response to the second signal, the third signal providing the indicator for the protection router;
> receiving the third signal via the network ring at the signal multiplexor and forwarding the third signal to the protection router via the protection line and to the working router via a working line;
> receiving the third signal at the working router and terminating communication between the working router and the signal multiplexor on detecting the indicator for the protection router in the third signal.

Claim 11 discloses terminating a communication between a router and a multiplexor based on the presence of an identifier of a protection router in a signal received from a neighbor device coupled to a network ring with which the router communicates. Analogous to the discussion above with respect to claim 1, neither Shew nor Hess disclose or suggest a router terminating a communication between the router and a multiplexor based on the presence of an identifier of a protection router in a signal received from a neighbor device coupled to a network ring with which the router communicates. As a result, claim 11 is patentable over Shew in view of Hess for the reasons discussed above. Since claims 12-19 depend from claim 11 and include additional limitations, claims 12-19 are also patentable over Shew in view of Hess.

Claim 20 recites:

> A method comprising:
> transmitting a heartbeat signal from a protection router for receipt by a working router;
> if the protection router fails to receive a signal in response to transmitting the heartbeat signal, then:
> transmitting a request signal from the protection router for receipt by a neighbor device via a signal multiplexor and a network ring, the request signal providing an indicator for the protection router, the request signal for causing:
> the neighbor device to transmit a response signal from the neighbor device in response to the request signal, the response signal to provide the indicator for the protection router;
> the signal multiplexor to receive the response signal via the network ring and forward the response signal to the protection router via the protection line and to the working router via a working line;
> the working router to receive the response signal and terminate communication between the working router and the signal multiplexor if the indicator for the protection router in the response signal is detected.

Similar to the discussion above with respect to claim 11, neither Shew nor Hess

disclose or suggest a router terminating a communication between the router and a

multiplexor based on the presence of an identifier of a protection router in a signal received

from a neighbor device coupled to a network ring with which the router communicates. As a

result, claim 20 is patentable over Shew in view of Hess for the reasons discussed above.

Claim 21 recites:

> An article of manufacture, comprising:
> a machine accessible medium that provides instructions that
> when executed by the machine cause the machine to:
>> transmit a heartbeat signal for receipt by a working router;
>> if the machine fails to receive a signal in response to the
> heartbeat signal, then:
>> transmit a request signal from the protection router for receipt
>> by a neighbor device via a signal multiplexor and a network ring,
>> the request signal providing an indicator for the protection router,
>> the request signal for causing:
>>> the neighbor device to transmit a response signal from the
>>> neighbor device in response to the request signal, the response
>>> signal to provide the indicator for the protection router;
>>> the signal multiplexor to receive the response signal via the
>>> network ring and forward the response signal to the protection
>>> router via the protection line and to the working router via a
>>> working line;
>>> the working router to receive the response signal and terminate
>>> communication between the working router and the signal
>>> multiplexor if the indicator for the protection router in the response
>>> signal is detected.

Similar to the discussion above with respect to claim 11, neither Shew nor Hess

disclose or suggest a router terminating a communication between the router and a

multiplexor based on the presence of an identifier of a protection router in a signal received

from a neighbor device coupled to a network ring with which the router communicates. As a

result, claim 21 is patentable over Shew in view of Hess for the reasons discussed above.

Claims 2, 6-8, 10, and 12-19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Shew (U.S. Patent No. 6,530,032) and Hess (U.S. Patent No. 5,835,696) as applied to claim 1 above, and further in view of RFC1661. Applicants submit that the present claims are patentable over Shew and Hess, even in view of RFC 1661.

RFC 1661 discloses the Point-to-Point Protocol (PPP), which provides a standard method for transporting multi-protocol datagrams over point-to-point links. (RFC 1661 at page 1, Abstract.) Applicants submit that there is no disclosure or suggestion in RFC 1661 of a router detecting a communication switch from the router to a redundant router based on the presence of an identifier of the redundant router in a signal received from a neighbor device coupled to a network ring with which the router communicates. Nor does RFC 1661 disclose or suggest a router terminating a communication between the router and a multiplexor based on the presence of an identifier of a protection router in a signal received from a neighbor device coupled to a network ring with which the router communicates.

As discussed above with respect to claim 1, Shew in view of Hess does not disclose or suggest a router detecting a communication switch from the router to a redundant router based on the presence of an identifier of the redundant router in a signal received from a neighbor device coupled to a network ring with which the router communicates. Also, as discussed above with respect to claim 11, Shew in view of Hess does not disclose or suggest a router terminating a communication between the router and a multiplexor based on the presence of an identifier of a protection router in a signal received from a neighbor device coupled to a network ring with which the router communicates. Therefore, any combination of Shew, Hess, or RFC 1661 would not teach or suggest the claimed invention. Accordingly, the present claims are patentable over Shew and Hess, in view of RFC 1661.

Applicant respectfully submits that the rejections have been overcome and that the claims are in condition for allowance. Accordingly, applicant respectfully requests the rejections be withdrawn and the claims be allowed.

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.
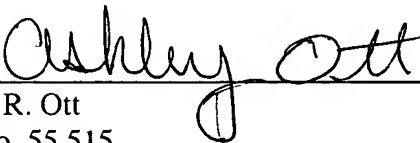
Applicant respectfully petitions for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17(a) for such an extension.

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: <u>November 23, 2004</u>   _____
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